

KRS
ELECTRONICS

DATA-STACT MD-2



THE KRS **DATA-STACT* MD-2** PORTABLE INSTRUMENTATION RECORDER

The KRS DATA-STACT Model MD-2 Tape Recorder operates with a single 1200-foot magnetic tape cartridge within a 35-pound housing for rack mounting. The STACTape* continuous-loop magnetic tape cartridge, a unique KRS-developed data-recording package, is capable of recording and reproducing up to four channels, or two standard I.R.I.G. channels, on 1/4-inch wide tape.

Instrumentation Quality Recorder

The DATA STACT MD-2 Recorder utilizes plug-in, interchangeable FM or Direct-type electronics fully covering the frequency range of DC to 100 kc. High quality microgap heads make it possible to record and reproduce data at one-half the tape speed of standard (I. R. I. G.) bandwidth instruments. Model MD-2 Recorders are available in tape speeds of 15/16, 1 1/8, 3 3/4, 7 1/2, 15, or 30 ips. Dual speed units can be supplied on special order. Desk type cabinets can also be furnished on special order.

Easy Tape Handling

KRS STACTape Cartridges are factory-loaded with standard 1 mil base Mylar tape in 1200-foot endless-loop rolls. Operating controls on the recorder include fast forward and reversing. Loading the recorder is a simple matter of sliding the cartridge down guide rails, an operation that takes no more than three seconds to complete. Press of the **Eject** button automatically releases the cartridge for removal from the instrument. Plainly marked, backlighted pushbutton controls make operation practically foolproof.

Reliable Operation

Model MD-2 Recorders have only two moving parts: a cool-running synchronous motor which belt drives a unique, non-slip capstan. Plug-in, solid state electronics help reduce maintenance problems to a bare minimum. Tapes last longer and have fewer dropouts in the STACTape Cartridge because they are completely protected from handling in use, in transit, or in storage.

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OPERATING FEATURES

The operator needs only to slide a cartridge into place and push the **Start** button to operate the recorder. Stopping, reversing, and fast forward operating modes are also simple pushbutton controls. A built-in cue tone signal can be introduced onto the tape by toggle switch controls to provide reference and timing signals at command on any or all channels. Remote control of all functions is a standard MD-2 feature.

The STACTape Cartridge incorporates a reversing feature that allows the tape to be reversed for a few minutes running time (200 feet). The fast forward drive can be engaged for any desired length of time by pressing the **Fast-F** pushbutton control. Head-mounting bracket provides space for an optional erase head, available as an accessory item.

RECORDER SPECIFICATIONS

Tape Speeds:	Choice of 15/16, 17 $\frac{1}{2}$, 3 $\frac{3}{4}$, 7 $\frac{1}{2}$, 15, or 30 ips; two adjacent speeds available on special order.
Models:	Basic recorder furnished either with two- or four-track microgap instrumentation heads, and any combination of FM and Direct Record plug-in electronics, up to four record and/or reproduce; erase feature furnished as an optional accessory.
Wow and Flutter:	Less than 0.1% RMS over the range of 0 to 300 cps from tape speeds of 15/16 ips and higher.
Cartridges:	Accommodate up to 1,200 feet of lubricated, $\frac{1}{4}$ " 1 mil base Mylar tape in an endless loop; maximum tape footage provides 30 minutes recording time at 7 $\frac{1}{2}$ ips, or 60 minutes at 3 $\frac{3}{4}$ ips, etc.
Bias:	High Frequency A.C. at 500 kc.
Power Requirements:	Approximately 60 watts at 105 to 125 v.a.c., 60 cps; 50 cps models available on special order.
Dimensions:	7" high by 19" wide by 13" deep (in rack mounting cabinet).
Weight:	35 lbs. approximately, complete with full set of four record and four reproduce electronics and one cartridge.
Electronics:	Miniature, all-solid-state, on separate plug-in epoxy-glass circuit boards; units are readily replaceable, but seldom require replacement or maintenance; FM record and reproduce electronics are interchangeable with Direct. Tuning elements and equalizers are also plug-in type.

ELECTRONIC SPECIFICATIONS

DIRECT RECORDING

Tape Speed	FREQUENCY RESPONSE RECORD/REPRODUCE:		
	Standard Bandwidth RMS Signal-to-Noise at 37 db.	Standard Bandwidth RMS Signal-to-Noise at 41 db.	Double Bandwidth RMS Signal-to-Noise at 36 db.
	*Frequency Response	*Frequency Response	*Frequency Response
30 ips	50-50,000 cps	300-50,000 cps	300-100,000 cps
15 ips	50-30,000 cps	300-30,000 cps	300- 50,000 cps
7 $\frac{1}{2}$ ips	50-15,000 cps	300-15,000 cps	300- 25,000 cps
3 $\frac{3}{4}$ ips	50- 7,500 cps	300- 7,500 cps	300- 12,500 cps
1 $\frac{7}{8}$ ips	50- 3,750 cps	300- 3,750 cps	300- 7,500 cps
1 $\frac{1}{16}$ ips	50- 1,875 cps	300- 1,875 cps	300- 3,750 cps

*Plus or Minus 3 db, and referred to 1.0 Volt RMS and 1% distortion at 1000 cps.

Equalization:	 Plug-in module (one for each tape speed) One module furnishes up to 12 tracks
Bias Frequency:	 500 Kc.
Total Harmonic Distortion:	 1% at 1000 cps.
Input Level:	 0.1 Volts to 10 Volts RMS, unbalanced to ground.
Input Impedance:	 100,000 ohms.
Output Level:	 1 Volt RMS across 10,000 ohms at normal recording level (1% distortion)
Output Impedance:	 Output is developed across 200 ohms in series with 25 mfd., unbalanced to ground. Maximum loading, 1000 ohms.
Direct Record Amplifier	
Controls:	 Level Control; Bias Level; Distortion Adjustment.
Direct Reproduce Amplifier	
Controls:	 Level Control; Equalization trimmer.

FM RECORDING

Tape Speed	FREQUENCY RESPONSE RECORD/REPRODUCE:			
	Single Bandwidth Center Carrier Frequency	Single Bandwidth *Freq. Response	Single Bandwidth RMS Signal-to-Noise	Double Bandwidth Specifications
30 ips	27.0 Kc.	0 - 5,000 cps	35 db	Twice the frequency response shown, for any given tape speed, at approximately 2 db lower signal-to-noise ratio than for single bandwidth. Center carrier frequencies are double those for single bandwidth.
15 ips	13.5 Kc.	0 - 2,500 cps	35 db	
7 $\frac{1}{2}$ ips	6.75 Kc.	0 - 1,250 cps	38 db	
3 $\frac{3}{4}$ ips	3.37 Kc.	0 - 625 cps	36 db	
1 $\frac{7}{8}$ ips	1.68 Kc.	0 - 312 cps	35 db	
15/16 ips	844 cps	0 - 156 cps	35 db	

*Plus or Minus $\frac{1}{2}$ db, and based upon plus or minus 40% deviation for full scale signal.

Total Harmonic Distortion:	 Less than 1.0%
Linearity:	 DC (at all tape speeds) is 0.5% of full bandwidth.
D.C. Drift:	 Less than 2% (overall) of full bandwidth for a change of temperature in the range 40 deg. F to 120 deg. F, following initial warm-up of several minutes, combined with a line voltage variation of 105 to 125 Volts.
Input Level:	 0.25 Volts minimum to 10 Volts maximum RMS, unbalanced to ground.
Input Impedance:	 20,000 ohms minimum, unbalanced to ground.
Output Level:	 1 Volt across 10,000 ohms for plus or minus 40% deviation (100% Modulation)
Polarity:	 A positive input signal produces an increase in frequency.
FM Center Frequency Tuning	
Elements and Filters:	 Plug-in Record Amplifier center frequency module (one for each tape speed). FM Limiter and FM Discriminator for reproduce are on separate plug-in cards. Only an FM Discriminator is required for each tape speed. (It also contains the low pass output filter for that tape speed.)
FM Record Amplifier Controls:	 Level Control; Center Frequency Trimmer; Zero Balance Trimmer
FM Discriminator Controls:	 Level Control; Zero Balance Trimmer; Output Filter Frequency Trimmer

The KRS DATA-STACT Portable Instrumentation Recorder, like all KRS products, is a precision unit backed by a quality conscious organization. All units are guaranteed against defects in operation as a result of faulty parts or labor for a period of one year.



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INSTRUMENTATION DIV. BULLETIN MD 2 10M 864

COMPLETE LIST PRICES

STANDARD KRS ELECTRONICS PORTABLE CARTRIDGE INSTRUMENTATION RECORDERS

MODEL DR-1, FOR VOICE AND AM DATA RECORDING

Basic 6-Deck Recorder/Reproducer for any <u>single</u> speed; 15/16, 1 7/8, 3 3/4, 7 1/2, 15 or 30 ips, up to 6 Cartridges (2 channels per cartridge, standard) with end of tape sensing head for all cartridges; less cartridges**-----	\$1650.
Power Supply (for up to 12 Record and 12 Reproduce Amplifiers)-----	120.
Heads (2 track Record; and 2 track Reproduce, Epoxy Surface) each-----	35.
Direct Record Amplifier*-----	40.
Direct Reproduce Amplifier* with equalizer for specified speed-----	45.
Bias Oscillator (for up to 12 channels)-----	75.
Cue Oscillator (for up to 12 channels at 1Kc, 6Kc, 10Kc or option)-----	35.

*Specify either instrumentation or audio (NAB) equalization. Also, specify whether 600 ohm input/output or instrumentation standard (IRIG) impedances.

MODEL DR-2, FOR AM AND FM DATA RECORDING

Basic 6-Deck Recorder/Reproducer, 6 speed; 15/16, 1 7/8, 3 3/4, 7 1/2, 15 and 30 ips; for up to 6 Cartridges (2 channels per cartridge, standard) with end of tape sensing head for all cartridges; less cartridges**-----	\$2900.
Power Supply (for up to 12 Record and 12 Reproduce Amplifiers)-----	375.
Heads (2 track Record; and 2 track Reproduce, microgap air gap, metal surfaced, IRIG compatible) each-----	150.
Direct Record Amplifier, plug-in type-----	50.
Direct Reproduce Amplifier (with plug-in equalizer for one speed), plug-in type-----	120. 50.
Plug-in Equalizer-----	10.
Direct Record, with Bias Oscillator (for up to 12 channels on same unit)-----	100.
Cue Oscillator (for up to 12 channels at 1Kc, 6Kc, 10Kc or other option)-----	35.
FM Limiter, plug-in type-----	50.
FM Discriminator (with tuning element and output filter for one speed) plug-in type-----	120.
FM Record Amplifier (with plug-in tuning element for one speed), plug-in type---	85.
Plug-in FM Record Tuning Element-----	20.

MODEL MD-1, SINGLE CARTRIDGE UNIT, FOR AM AND FM DATA RECORDING, 1 OR 2 CHANNELS

Basic Recorder/Reproducer, with 5 1/2" panel Height (19") Rack Mounting, for any <u>single</u> speed; 1 7/8, 3 3/4, 7 1/2, 15 or 30 ips; non-reversing; with or without (optional, no extra cost) end of tape sensing head; less tape cartridge**-----	\$750.
Power Supply, for 1 or 2 channels Record and Reproduce Electronics-----	120.
Erase Head (Optional), 2 channels, for (D.C.) Erase (suitable for FM Recording Erase Only)-----	20.
Heads, Record 2 channel; and Reproduce 2 channel, each, <u>same as for Model DR-2.</u> (See DR-2 Pricing)	
Electronics, Direct or FM, Record and Reproduce, up to 2 channels each, <u>same as for Model DR-2</u> (with similar specs. as Model DR-2). (See DR-2 Pricing)	

**Note: Basic unit available with modified features on special order.